



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
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March 9, 2018

Derek J. Robinson, BRAC Environmental Coordinator
Department of the Navy
Base Realignment and Closure Program Management Office West
33000 Nixie Way, Building 50
San Diego, CA 92147

Re: EPA Comments on the Draft Demonstration of Activated Carbon Amendments to
Reduce PCB Bioavailability, Hunters Point Naval Shipyard, San Francisco, California,
February 7, 2018

Dear Mr. Robinson:

Attached are EPA's comments on Draft Demonstration of Activated Carbon Amendments to
Reduce PCB Bioavailability, Hunters Point Naval Shipyard, San Francisco, California, dated
February 7, 2018.

If you have any questions, please do not hesitate to call me at (415) 972-3681 or e-mail me at
huang.judy@epa.gov.

Sincerely,

A handwritten signature in blue ink that reads "Judy C. Huang".

Judy C. Huang, P.E.
Remedial Project Manager

cc:

Nina Bacey, DTSC (via email)
Jeff White, RWQCB (via email)
David Tanouye, RWQCB (via email)
Amy Brownell, SFDPH (via email)
Sharon Ohannessian, US Navy (via email)
Danielle Janda, US Navy (via email)

Review of the Draft Demonstration of Activated Carbon Amendments to Reduce PCB Bioavailability, Hunters Point Naval Shipyard, San Francisco, California, February 2018

GENERAL COMMENTS

1. The impact of severe weather conditions on activated carbon amendment applications (pilot study or full-scale applications) is not directly addressed in Sections 7.0 (Discussion) or 8.0 (Summary) of the Draft Demonstration of Activated Carbon Amendments to Reduce PCB Bioavailability, Hunters Point Naval Shipyard, San Francisco, California, dated February 2018 (the Pilot Study). This is of particular concern given the severe winter storms that compromised field exposures during the 20-month post-placement monitoring. According to Section 3.2 (Changes to Monitoring Design), “An additional monitoring event was added 26 months post-placement after severe winter storms compromised field exposures during the 20-month post-placement monitoring. Sample locations were disrupted when a silt curtain adjacent to the pilot plots came loose and dragged across the site. Many field tissue exposure chambers and SPME [soil-phase microextraction] deployments were dislodged from their sample locations by the silt curtain. Freshwater runoff into the South Basin also decreased salinity to approximately 10 ppt [parts per trillion] and likely contributed to elevated clam mortality in the field exposures.” Section 7.2 (Physical Stability and Longevity of the Amendment) only notes that the decrease in surficial total organic carbon (TOC) at 26-months post-placement monitoring may have been from mixing with deeper sediments and from dilution of the activated carbon (AC) with approximately two inches of new sediment deposition because a severe winter storm in 2017. Please revise Sections 7.0 and 8.0 of the Pilot Study to discuss the impact of severe weather conditions on activated carbon amendment applications.
2. Section 3.2 (Changes to Monitoring Design) notes that an additional monitoring event was added 26 months post-placement after severe winter storms compromised field exposures during the 20-month post-placement monitoring; however, it is unclear why 6-months following the severe winter storms was deemed appropriate for the additional monitoring event. Given that field exposures were compromised, it is unclear if the baseline, 8-month post-placement monitoring, and 14-month post-placement monitoring are comparable to the 26-month post-placement monitoring. Specifically, the influence of the severe winter storms on the performance objectives was not directly monitored or evaluated. Please revise the Pilot Study to clarify why 6-months following the severe winter storms was deemed appropriate for the additional monitoring event. In addition, please revise the Pilot Study to clarify if the baseline, 8-month post-placement monitoring, and 14-month post-placement monitoring are comparable to the 26-month post-placement monitoring given that data was compromised.
3. Sections 4.2 (Hydrodynamic Monitoring) and 5.1.3 (Hydrodynamic) do not discuss the impact of the severe winter storms on hydrodynamic conditions. According to Appendix D (Hydrodynamic Data Report), “Advanced statistical analysis (wavelet analysis) revealed statistically significant time scales and periodicities of data variability as well as relationships between solids flux and environmental parameters. Wavelet results indicated strong commonality between solids flux and storm-related parameters (wave

height, wind speed, and precipitation) during winter months and between solids flux and dissolved oxygen during non-storm periods. These data suggest that winter storm-induced sediment resuspension processes were significant to solids flux. Additionally, biological growth and decay processes may have contributed autochthonous solids to the HPNS study site.” Please revise Sections 4.2 and 5.1.3 to summarize information presented in Appendix D and its impact on the post-placement monitoring.

4. Based on Section 5.1.2 (Total and Black Carbon Analysis), “Chemical analysis of carbon content in the pilot area consisted of TOC and black carbon analysis of sediment core samples collected from three depth intervals (0.0 to 0.2 foot, 0.2 to 0.4 foot, and 0.4 to 0.6 foot);” however, Section 5.1.2.2 (Initial Placement Monitoring Event) only discusses TOC and black carbon analysis of the top 0.0 to 0.2 foot of sediment. It should be noted that Tables 5-1 (Statistical Summary of TOC Content Results) and 5-2 (Statistical Summary of Black Carbon Content Results) and Figures 5-6B (Sediment TOC Content following Initial Placement) and 5-7B (Sediment Black Carbon following Initial Placement) provide TOC and black carbon content for all three depth intervals. As such, it is unclear why only TOC and black carbon analysis of the top 0.0 to 0.2 foot of sediment are discussed in Section 5.1.2.2. Please revise Section 5.1.2.2 to discuss the TOC and black carbon content for all three depth intervals.
5. Section 5.1.2.4 (14-Month Post-Placement Monitoring Event) does not discuss why TOC level evaluations were limited to 0.4-foot depth in Plot 1 or 0.2-foot depth in Plot 2 during the 14-month post-placement monitoring event. The section states that, “Although the Plot 1 increase in TOC occur in surficial sediment down to 0.4-foot depth, and at concentrations up to 7 percent, Plot 2 TOC increases are limited to 0.2-foot deep with a maximum of 15 percent. Likewise, Plot 1 increases in black carbon occur in surficial sediments down to 0.4-foot deep and at concentrations up to 4 percent with Plot 2 black carbon increases are limited to 0.2-foot deep up to 2.5 percent.” However, the text does not discuss why TOC level evaluations were limited to 0.4-foot depth in Plot 1 or 0.2-foot depth in Plot 2 during the 14-month post-placement monitoring event. Please revise the Pilot Study to discuss why TOC level evaluations were limited to 0.4-foot depth in Plot 1 or 0.2-foot depth in Plot 2 during the 14-month post-placement monitoring event.
6. While Section 8.0 (Summary) indicates that the pilot test was sufficient to demonstrate that AC amendments could meet the three performance objectives, the Pilot Study does not provide a clear conclusion regarding which AC amendment is appropriate for a full-scale application. Similarly, Section 7.0 (Discussion) notes several recommendations for the future implementation of a full-scale application but the Pilot Study does not provide detailed recommendations or lessons learned. The Pilot Study should discuss the relative effectiveness of the AC amendments and make conclusions and recommendations for future implementation of a full-scale application. Please revise the Pilot Study to discuss the relative effectiveness of the AC amendments and make conclusions and recommendations for future implementation of a full-scale application.

SPECIFIC COMMENTS

1. **Section 1.0, Introduction, Page 1-1:** Section 1.0 does not reference the Final Work Plan for the Demonstration of Activated Carbon Amendments: Hunters Point Naval Shipyard, San Francisco, California, dated May 2015 (Work Plan) under which the field demonstration of AC amendments at Hunters Point Naval Shipyard (HPNS) was conducted. The Work Plan is not referenced until Section 1.4 (Deviations from the Work Plan) of the Pilot Study, which discusses substantive deviations from the Work Plan. Please revise the Pilot Study to reference the Work Plan in Section 1.0.
2. **Section 1.3.1, Baseline Site Conditions, Page 1-2:** Section 1.3.1 discusses the capping of the Parcel E-2 landfill and indicates that a Parcel E-2 shoreline remedy is currently in progress, but the section does not acknowledge the two polychlorinated biphenyl (PCB) hot spot time critical removal actions (TCRAs) occurred. Specifically, the TCRAs discussed in the Final Amended Action Memorandum Time-Critical Removal Action for the PCB Hot Spot Area at Parcel E-2 – Revision 2010, Hunters Point Shipyard, San Francisco, CA, dated February 5, 2010 and the Final Removal Action Completion Report, Phase II, Time-Critical Removal Action of the PCB Hot Spot Area at Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California, dated May 2013 are not referenced. Given that these TCRAs have aided in the reduction of PCB-contaminated soil and free product entering Parcel F, please revise Section 1.3.1 to acknowledge that these TCRAs occurred.
3. **Section 1.3.4, Climate, Page 1-3:** Section 1.3.4 discusses the recorded average daily air temperature and recorded average monthly precipitation from 1945 through January 2015; however, it is unclear why the climate during May 2015 through August 2017 is not discussed. Based on Table 3-1 (Pilot Amendment Monitoring Summary), the demonstration of AC amendments at HPNS occurred between May 2015 and August 2017. In addition, Section 1.4 (Deviations from the Work Plan) indicates that severe winter storms compromised field exposures during the 20-month post-placement monitoring. As such, please revise Section 1.3.4 to discuss the climate during the period from May 2015 through August 2017.
4. **Section 1.4, Deviations from the Work Plan, Page 1-5:** The third paragraph states, “For these reasons, at the time, personnel from the Bodega Marine Laboratory informed CH2M Hill Kleinfelder, A Joint Venture (KCH) that, based on their professional judgment and similarities among these species, they expected that white sand clams should perform similarly to bent-nosed clams in field bioaccumulation exposures;” however, documentation of this correspondence is not provided. Given that the clam species used during the baseline deployment is a substantive deviation from the Work Plan, please revise the Pilot Study to provide documentation of the correspondence between personnel from the Bodega Marine Laboratory and KCH.
5. **Section 3.1, Monitoring Design, Page 3-2:** According to Section 3.1, sampling locations were established prior to the determination that a buffer zone would be needed between the plots; however, the Pilot Study does not discuss why a buffer zone was needed. For example, Section 1.4 (Deviations from the Work Plan) does not discuss the

use of a buffer zone. Please revise the Pilot Study to clarify why a buffer zone was needed between the plots.

6. **Section 5.1.1.5, 26-Month Post-Placement Monitoring Event, Page 5-2:** The section states, “Seven of the 16 (43 percent) of the AquaGate [AquaGate+PAC (Powdered AC) (AquaGate)] locations and 16 of 16 (100 percent) of the SediMite locations showed incorporation of the amendment into the native sediment;” however, the text does not discuss why 57 percent of the Plot 1 (AquaGate) locations did not show incorporation of the amendment into the native sediment. Please revise Section 5.1.1.5 to discuss why 57 percent of the Plot 1 (AquaGate) locations did not show incorporation of the amendment into the native sediment.
7. **Section 5.1.2.3, 8-Month Post-Placement Monitoring Event, Pages 5-3 and 5-4:** Section 5.1.2.3 states, “An increase in mean TOC and black carbon, relative to the baseline conditions, was also observed for the 0.2- to 0.4-foot interval for Plot 1 (AquaGate, ANOVA, $p=0.02$). A significant change in TOC was not observed in this interval for Plot 2;” however, the last paragraph states that the results did not show discernible pattern or a significant difference between AC amendment subplots. Please revise the Pilot Study to address this discrepancy.
8. **Section 5.2.1, PCB Concentrations in Sediment, Pages 5-5 and 5-6:** Based on Section 5.2.1, “The concentrations of total PCBs measured within the buffer and reference areas during the 14-month and 26-month sampling events were greater than those measured within the test plots (Table 5-3);” however, further discussion of this occurrence is not provided. Given the supposition in the text that contaminated sediments were diluted by the deposition of cleaner background sediment transported into the South Basin from the San Francisco Bay, it is unclear why concentrations of total PCBs measured within the buffer and reference areas during the 14-month and 26-month sampling events were greater than those measured within the test plots. Please revise Section 5.2.1 to clarify why concentrations of total PCBs measured within the buffer and reference areas during the 14-month and 26-month sampling events were greater than those measured within the test plots.
9. **Table 2-2, Summary of Determined Doses:** According to Section 1.4 (Deviations from the Work Plan), the area of each of the test plots was adjusted to maintain the specified thickness of AC; however, Table 2-2 only presents the adjusted target values and applied values. For transparency and comparability, please revise Table 2-2 to provide the values originally presented in the Work Plan along with the adjusted target values and applied values.
10. **Table 2-2, Summary of Determined Doses:** Table 2-2 indicates that the adjusted target carbon dose for Plot 2 (SediMite) was four to six percent, yet the applied carbon dose was 6.6 percent. While the variation between the adjusted target and applied carbon dose values do not appear statistically different, it is unclear why the variation is not discussed in the Pilot Study given the applied carbon dose value exceeding the upper end of the adjusted target carbon dose. Please revise the Pilot Study to discuss the variation between the adjusted target and applied carbon dose values.

11. **Figure 1-2, Site Location; Figure 1-3, Location of Pilot Study Site with Select Bathymetry Contours; and, Figure 1-4, Location of 1-Acre Pilot Study Site with Total PCB Surface Concentrations:** Section 1.1 (Site Background) notes that the major sources of PCBs to the South Basin are the Parcel E-2 landfill area and Yosemite Creek (also known as Yosemite Slough) yet these site features are not identified on Figures 1-2, 1-3 or 1-4. To provide sufficient context, please revise Figures 1-2, 1-3, and 1-4 to identify the Parcel E-2 landfill area and Yosemite Creek.
12. **Figure 1-3, Location of Pilot Study Site with Select Bathymetry Contours:** The legend in Figure 1-3 indicates that the depth in meters relative to the mean lower low water (MLLW) is 1 (green contour), 0 (yellow contour) and -1 (orange contour); however, these designations are confusing. For example, -1 (orange contour) implies an elevation of one meter above MLLW, but this should be represented by the green contour as the area farther from the shoreline is the deepest. Please revise Figure 1-3 to provide the elevation in relation to MLLW rather than depth for clarity.
13. **Figure 5-1, Representative SPI Images from the Baseline and Post-Placement Monitoring Events:** Inconsistencies appear to exist regarding the mixing at Stations 7 and 34. The 8-month and 14-month post-placement event sediment profile imaging (SPI) photographs for Stations 7 and 34 indicate that the AC amendment was “completely mixed,” while the 26-month post-placement event photographs for Stations 7 and 34 indicate a “layer present.” The carbon layer should not have reappeared after mixing was complete. However, it appears that layers may also be present during the 8-month and 14-month post-placement event photographs for Stations 7 and 34, but the layers are less defined due to smearing. Please revise the Pilot Study to discuss the inconsistencies regarding the mixing at Stations 7 and 34.

MINOR COMMENT

1. **Section 2.2.3, Field Placement, Page 2-3:** The text states, “Each placement area was divided in half longitudinally (into two individual lanes), with 8 placement cells in each lane for a total of 16 cells per 0.5-acre test plot, as shown on Figure 2-2;” however, Section 2.1 (Selection and Dosing) notes that plot areas were approximately 0.4 acres each (adjusted from 0.5 acres). Please revise Section 2.2.3 to note that the test plots were 0.4 acres rather than 0.5 acres.